In the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) A spin-valve magnetoresistive sensor comprising, on a substrate, an antiferromagnetic layer; a pinned magnetic layer formed in contact with said antiferromagnetic layer and having a magnetization direction made stationary under an exchange anisotropic magnetic field generated by interaction with said antiferromagnetic layer; a free magnetic layer divided into a first free magnetic layer disposed farther away from the pinned magnetic layer and a second free magnetic layer disposed closer to the pinned magnetic layer; a non-magnetic intermediate layer interposed between the first free magnetic layer and the second free magnetic layer, and the first magnetic layer having recesses formed therein; a non-magnetic electrically conductive layer formed between said [~~a~~]free magnetic layer and said pinned magnetic layer; soft magnetic layers that are arranged on said first free magnetic layer having a spacing between said soft magnetic layers corresponding to a track width defined at a level at which said soft magnetic layers fill recesses in the first free magnetic layer; bias layers formed on said soft magnetic layers to uniformly arrange a magnetization direction of said free magnetic layer in a direction crossing the magnetization direction of said pinned magnetic layer; and electrically conductive layers formed on the bias layers to apply a detection electric current to said free magnetic layer,

wherein a thickness of said soft magnetic layers exceeds a depth of the recesses, and said antiferromagnetic layer and said bias layer each comprising an alloy containing Mn and at least one element selected from a group consisting of Pt, Pd, Rh, Ru, Ir, Os, Au, Ag, Cr, Ni, Ne, Ar, Xe, and Kr.

2. (Previously presented) A spin-valve magnetoresistive sensor according to Claim 1, wherein at least one of said pinned magnetic layer and said free magnetic layer is divided into two layers with a non-magnetic intermediate

layer interposed between the two layers, and the divided two layers are held in a ferrimagnetic state in which the divided two layers are magnetized in directions 180° different from each other.

3. (Previously presented) A spin-valve magnetoresistive sensor according to Claim 1, wherein said antiferromagnetic layer comprises an alloy having the following composition formula;$X_mMn_{100-m}$where X is at least one element selected from a group consisting of Pt, Pd, Rh, Ru, Ir and Os, and a composition ratio *m* satisfies 48 atom % $\leq$ m $\leq$ 60 atom %.

4. (Previously presented) A spin-valve magnetoresistive sensor according to Claim 1, wherein said bias layer comprises an alloy having the following composition formula;$X_mMn_{100-m}$where X is at least one element selected from a group consisting of Pt, Pd, Rh, Ru, Ir and Os, and a composition ratio *m* satisfies 48 atom % $\leq$ m $\leq$ 60 atom %.

5. (Previously presented) A spin-valve magnetoresistive sensor according to Claim 1, wherein said antiferromagnetic layer comprises an alloy having the following composition formula;$Pt_mMn_{100-m-n}D_n$where D is at least one element selected from a group consisting of Pd, Rh, Ru, Ir and Os, and composition ratios *m, n* satisfy 48 atom % $\leq$ m + n $\leq$ 60 atom % and 0.2 atom % $\leq$ n $\leq$ 40 atom %.

6. (Previously presented) A spin-valve magnetoresistive sensor according to Claim 1, wherein said bias layer comprises an alloy having the following composition formula;$Pt_mMn_{100-m-n}D_n$where D is at least one element selected from a group consisting of Pd, Rh, Ru, Ir and Os, and composition ratios *m, n* satisfy 52 atom % $\leq$ m + n $\leq$ 60 atom % and 0.2 atom % $\leq$ n $\leq$ 40 atom %.

7. (Previously presented) A spin-valve magnetoresistive sensor according to Claim 1, wherein said soft magnetic layer comprises a NiFe alloy.

8. (Previously presented) A spin-valve magnetoresistive sensor according to Claim 1, wherein recesses are formed in said free magnetic layer on both sides of an area corresponding to the track width, said soft magnetic layers are formed to fill said recesses and are directly joined to said free magnetic layer through bottom surfaces of said recesses, and said bias layers and said electrically conductive layers are successively formed on said soft magnetic layers.

9. (Currently presented) A spin-valve magnetoresistive sensor according to Claim 1, wherein ~~said free magnetic layer is divided into a first free magnetic layer disposed farther away from the pinned magnetic layer and a second free magnetic layer disposed closer to the pinned magnetic layer, a non-magnetic intermediate layer is interposed between the first free magnetic layer and the second free magnetic layer,~~ a magnetic film thickness of said first free magnetic layer is smaller than a magnetic film thickness of said second free magnetic layer.

10. (Withdrawn) A method of manufacturing a spin-valve type magnetoresistive sensor comprising:

forming an antiferromagnetic layer, a pinned magnetic layer, a non-magnetic electrically conductive layer, and a free magnetic layer successively on a substrate, thereby forming a first laminate;

heat-treating said first laminate at a first heat treatment temperature while applying a first magnetic field in a direction perpendicular to a direction of a track width, thereby generating an exchange anisotropic magnetic field in said antiferromagnetic layer to make magnetization of said pinned magnetic layer stationary;

forming soft magnetic layers on said first laminate while a spacing corresponding to the track width is left between said soft magnetic layers, forming bias layers on said soft magnetic layers, and forming electrically conductive layers on said bias layers for applying a detection electric current to said free magnetic layer, thereby forming a second laminate; and

heat-treating said second laminate at a second heat treatment

temperature while applying a second magnetic field smaller than the exchange anisotropic magnetic field of said antiferromagnetic layer in a direction of the track width, thereby imparting a bias magnetic field to said free magnetic layer in a direction crossing a magnetization direction of said pinned magnetic layer.

11. (Withdrawn) A method of manufacturing a spin-valve type magnetoresistive sensor according to Claim 10, wherein said antiferromagnetic layer and said bias layers are each made of an alloy containing at least one or more elements selected from among Pt, Pd, Rh, Ru, Ir, Os, Au, Ag, Cr, Ni, Ne, Ar, Xe and Kr, as well as Mn.

12. (Withdrawn) A method of manufacturing a spin-valve type magnetoresistive sensor according to Claim 10, wherein said first heat treatment temperature is in a range of 220°C - 270°C.

13. (Withdrawn) A method of manufacturing a spin-valve type magnetoresistive sensor according to Claim 10, wherein said second heat treatment temperature is in a range of 250°C - 270°C.

14. (Withdrawn) A method of manufacturing a spin-valve type magnetoresistive sensor according to Claim 10, wherein said second magnetic field is in a range of 10 - 600 Oe (800 - 48000 A/m).